

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: **Arnold G. Slezak**
Assignee: **SEAGATE TECHNOLOGY LLC**
Application No.: **09/981,556** Group Art: **3729**
Filed: **October 17, 2001** Examiner: **A. Tugbang**
For: **METHOD TO REDUCE SERVO PATTERN RUNOUT ON A
PREWRITTEN DISC**

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Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

Sir:

APPELLANT'S AMENDED BRIEF

This Amended Brief is in reply to the Notification of Non-Compliant Appeal Brief mailed June 1, 2007, which pointed out that objected to, withdrawn, and canceled claims were listed in Section VIII. Those claims have been removed in this amended brief so that the listing in Section VIII includes only those claims involved in this appeal. Section II has also been updated to note the dismissal of Appellant's Rule 181 petition seeking to reverse the restriction requirement.

This brief contains these items under the following headings, and in the order set forth below:

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF CLAIMED SUBJECT MATTER
- VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- VII. ARGUMENT
- VIII. CLAIMS APPENDIX
- IX. EVIDENCE APPENDIX
- X. RELATED PROCEEDINGS APPENDIX

I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is Seagate Technology LLC.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this Appeal. However, on November 21, 2006 Appellant petitioned the Director to intervene under 37 CFR 1.181(a)(2), seeking to have the restriction requirement of 4/22/2005 (claims 25-33) either withdrawn or factually substantiated in the record. That petition was dismissed on May 2, 2007.

III. STATUS OF CLAIMS

The status of the claims in this application is:

<u>Claim</u>	<u>Status</u>
1. (Previously presented)	Independent.
2. (Canceled)	
3. (Previously presented)	Depends from claim 1.
4. (Canceled)	
5. (Previously presented)	Depends from claim 1.
6. (Previously presented)	Depends from claim 1.
7. (Previously presented)	Depends from claim 1.
8. (Previously presented)	Depends from claim 7.
9. (Previously presented)	Depends from claim 7.
10. (Withdrawn)	Independent.
11. (Withdrawn)	Depends from claim 10.
12. (Withdrawn)	Depends from claim 10.
13. (Withdrawn)	Depends from claim 12.
14. (Withdrawn)	Depends from claim 10.
15. (Withdrawn)	Depends from claim 10.
16. (Withdrawn)	Depends from claim 10.
17. (Withdrawn)	Depends from claim 16.
18. (Withdrawn)	Independent.

19. (Withdrawn)	Depends from claim 18.
20. (Withdrawn)	Depends from claim 19.
21. (Previously presented)	Depends from claim 9.
22. (Previously presented)	Depends from claim 21.
23. (Previously presented)	Depends from claim 22.
24. (Previously presented)	Depends from claim 23.
25. (Withdrawn)	Independent.
26. (Withdrawn)	Depends from claim 25.
27. (Withdrawn)	Depends from claim 26.
28. (Withdrawn)	Depends from claim 27.
29. (Withdrawn)	Depends from claim 28.
30. (Withdrawn)	Independent.
31. (Withdrawn)	Depends from claim 30.
32. (Withdrawn)	Depends from claim 31.
33. (Withdrawn)	Depends from claim 32.

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application: 1-33.

B. STATUS OF ALL THE CLAIMS

1. Claims canceled: 2 and 4
2. Claims withdrawn from consideration but not canceled: 10-20, and 25-33
3. Claims pending: 1, 3, 5-9, and 21-24
4. Claims allowed: none
5. Claims rejected: 1, 3, 5-9, and 21
6. Claims objected to: 22-24

C. CLAIMS ON APPEAL

Claims now on appeal: 1, 3, 5-9, and 21.

IV. STATUS OF AMENDMENTS

Appellant amended claim 1 to put it in better form for appeal in response to a new basis for the rejection in the Final Office Action of August 21, 2006. That amendment was not entered, as indicated by the Advisory Action of November 7, 2006.

Appellant filed a Pre-Appeal Brief Request for Review on November 21, 2006. The Panel's Decision of December 7, 2006 was to proceed to appeal, without comment.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The embodiments of the present invention as recited by the language of independent claim 1 contemplates a method (such as 200, FIG. 3) that includes placing prewritten discs (such as 108) around a motor hub (such as step 206). Each of the prewritten discs are characterized by servo tracks (shown as broken lines in FIG. 2) that are offset in relation to a common angular reference axis (such as 134) of each disc (see paragraph [0025]). The prewritten discs are placed with respect to each other disposing the angular reference axes symmetrically around the motor hub (such as step 208, see paragraph [0032]). Each disc is then biased in a direction of the respective angular reference axis (such as step 208) to concentrically align the servo tracks of a first disc of the prewritten discs with the servo tracks of a second disc of the prewritten discs.

The embodiments of the present invention as recited by the claims depending from claim 1 contemplate biasing each disc by pressingly engaging against an edge of each disc (such as biasing force 140 in FIG. 2). In some embodiments, the placing step (such as 208) disposes the angular reference axes in different nonopposite directions (such as three discs placed 120 degrees apart, see paragraph [0032]). In other embodiments the placing step disposes the angular reference axes in substantially opposite directions (such as two discs placed 180 degrees apart, see paragraph [0032]).

In some embodiments the placing step places prewritten discs with each having an indicia (such as 133) associated with the angular reference axis (such as 134). The indicia can be made of a laser index mark, and can exist on both sides of the disc. (see paragraph [0023]). Where the indicia exists on both sides, one indicia can be the mirror image of the

other so that the indicia can be used to identify the respective sides of the disc (see paragraph [0023]). FIG. 2 depicts embodiments wherein the indicia includes a first line that is coextensive with the angular reference axis, and second and third lines that are angularly disposed from the first line. Also as depicted in FIG. 2, the second and third lines can be nonsymmetrically disposed from the first line.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 3, 5, 7, 9, and 21 stand rejected under 35 USC 102 as being anticipated by U.S. 6,081,990 to Kuroba ("Kuroba '990").

Claim 6 stands rejected under 35 USC 103 as being unpatentable over Kuroba '990.

Claim 8 stands rejected under 35 USC 103 as being unpatentable over Kuroba '990 in view of JP405205442A (JP '422).

VII. ARGUMENT

IT IS CLEAR ERROR THAT THE EXAMINER HAS NOT ESTABLISHED A *PRIMA FACIE* CASE OF ANTICIPATION OVER KUROBA '990 BY FAILING TO SUBSTANTIATE EVIDENCE THAT IT IDENTICALLY DISCLOSES ALL THE RECITED FEATURES OF INDEPENDENT CLAIM 1

Appellant's specification and Kuroba '990 both address ways of handling data storage discs during "ex-situ" servowriting; that is, during first writing servo information to the discs with a servotrack writer (STW) and then installing the prewritten discs into a disc drive.

The present embodiments as recited by the language of claim 1 feature:

placing prewritten discs, each characterized by servo tracks that are offset in relation to a common angular reference axis of each disc, around a motor hub, the prewritten

discs placed with respect to each other disposing the angular reference axes symmetrically around the motor hub; and
biasing each disc in a direction of the respective angular reference axis to concentrically align the servo tracks of a first disc of the prewritten discs with the servo tracks of a second disc of the prewritten discs.
(excerpt of claim 1, emphasis added)

Appellant believes this appeal will turn on the Board's view of the competing constructions of the claim terms *offset* and *angular reference axis of each disc* in the record.

offset

As for the term *offset*, during the first two years of prosecution Appellant and the Examiner mutually agreed that the term *offset* in the context of the claim language plainly means the nonconcentricity of the servo tracks with respect to the disc center. The *offset* is the result of biasing the discs against the STW hub supporting the discs in rotation during servowriting. This *offset* is plainly disclosed in Kuroba '990 (FIGS. 1(a), 4, 5, 6, 7(a), 7(b), 8(a), 8(d), and (13) and the descriptions thereof) and in Appellant's specification (FIG. 2 and the descriptions thereof). Because the inside diameter of the disc opening is larger than the STW hub outside diameter, biasing the discs serves to positively locate the servo tracks to minimize repeatable runout.

However, in the final rejection of 8/21/2006 the Examiner for the first time posited a new construction for the term *offset*, as meaning that the servo tracks are "offset" because they are disposed in one direction (circular) while the *angular reference axis* is disposed in a different direction (radial).

Applicant attempted to amend the claims in response to the Examiner's new claim construction in order to more particularly point out and distinctly claim *servo tracks that are offset concentrically in relation to a center of each disc*.... Appellant pointed out in the

record that the after-final amendment was supported by the specification, and that is was necessary and proper because the amendment placed the claim in better condition for appeal and was made only in response to the new basis in the final rejection. The Examiner nonetheless concluded that the proposed amendment raised new issues requiring more searching and did not enter the amendment.

Appellant believes the Examiner's latest claim construction for *offset* is reversible error for being unreasonably broad because it ignores the plain meaning of the term that is consistent with its usage in the specification. *In re Morris*, 43 USPQ2d 1753 (Fed. Cir. 1997) The Examiner's claim construction is actually broad enough to encompass any two features that are not disposed identically in the same position and headed identically in the same direction. Assigning such an all-encompassing meaning that is inconsistent with the term's usage in the specification is completely divorced from the tenets of proper claim construction. Appellant believes that the previously agreed to construction should be used in deciding the merits of this appeal, that *servo tracks that are offset* means "servo tracks that are nonconcentric in relation to the disc center," or that in the alternative the Board should reopen the merits so that Appellant has the opportunity to amend the claim to more particularly point out and claim the subject matter at hand.

angular reference axis of each disc

As for the phrase *angular reference axis of each disc*, Appellant reiterates that the *angular reference axis* is explicitly recited as being a feature of each disc. Therefore, considering the claim language as a whole, the servo tracks are *offset* (nonconcentric) in relation to a *reference axis of each disc*. This language plainly means that once the servo

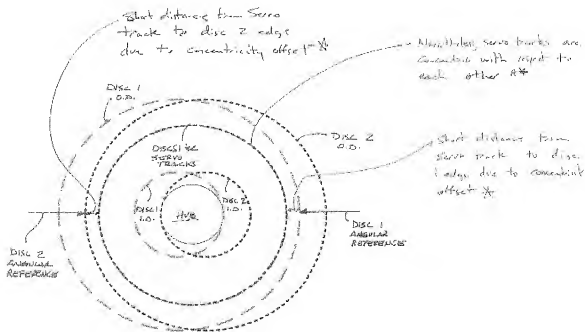
tracks are written, the *offset* (nonconcentricity) with respect to the disc is fixed in terms of a displacement in the direction of the *angular reference axis*.

The specification clearly discloses that the *angular reference axis* is determined by the direction of biasing the disc during servowriting. FIG. 2 depicts a prewritten disc mounted in a disc drive. Having previously biased the disc in the direction of force 140 in the STW, the disc made contact with the STW hub at contact point 138. The servo tracks are thereby *offset* in relation to the disc in the direction of force 140 (0 degrees). This direction of the *offset* is evident from FIG. 2, in that the spacing from the servo tracks to the right edge of the disc is substantially less than the spacing from the servo tracks to the left edge of the disc, while the spacings from the servo tracks to the top and bottom edges of the disc are substantially equal. FIG. 2 and the descriptions thereof further disclose that by aligning the contact point 138 with the biasing force in the disc drive too, then the servo tracks are concentric with the disc drive hub axis of rotation (see, for example, paragraph [0025]). Concentric rotation of the servo tracks is desirable in minimizing repeatable runout during servo positioning.

Thus according to claim 1, the present embodiments contemplate *prewritten discs*, each characterized by servo tracks that are *offset* in relation to a common angular reference axis of each disc. In the context explained above, this plainly means that two or more discs are biased in the same direction in the STW (such as the 0 degrees in FIG. 2) during servowriting. The prewritten discs are subsequently used to build a disc stack in the disc drive by disposing the angular reference axes symmetrically around the motor hub, and then biasing each disc in a direction of the respective angular reference axis.

Applicant has repeatedly provided the following explanatory diagram, and offered to

amend the specification to include it if that would aid in describing the present embodiments as claimed.



Both disc 1 (red) and disc 2 (blue) have servo tracks that are *offset* in relation to a common angular reference axis. This is evident, as above for FIG. 2, by the relatively small spacing between the servo tracks and the disc edge where the biasing force was applied in the STW (angular reference axis) during servowriting. Now in the disc drive stack, the angular reference axes are disposed symmetrically around the hub (180 degrees apart for two discs) and each biased in a direction of the respective angular reference axis. The result is that both sets of prewritten servo tracks are now disposed in concentric rotation with respect to the hub axis of rotation, and hence are disposed concentrically with respect to each other. However, note that because of the servo track offsets, the discs themselves are not concentric with each other, but rather are opposingly biased in order to balance the collective rotating

mass.

Because the plurality of discs are servowritten *at in relation to a common angular reference axis* (such as the 0 degrees of FIG. 2), the skilled artisan readily recognizes that two or more discs can be servowritten simultaneously. This advantageously reduces the servowriting cycle time per disc by a factor related to the number of discs that are simultaneously servowritten. In fact, Appellant today usually simultaneously servowrites about twelve discs per STW cycle time by practicing embodiments of the present invention.

This claimed feature is distinguishable over Kuroba '990 which does not build disc stacks from prewritten discs that are *characterized by servo tracks that are offset in relation to a common angular reference axis of each disc* as claimed. Rather, Kuroba '990 explicitly discloses that each disc that is biased differently in the disc stack must also be servowritten individually:

If a plurality of disk media 20 are stacked, a balance control can be attained by the following manner...However, in a case of the data surface servo system, the servo track writing (STW) must be performed individually for the groups of disks in which the contact position is changed for the respective groups.
(Kuroba '990, col. 8 lines 38-41, emphasis added)

The skilled artisan readily recognizes that the only reason the groups of discs with a common contact position must be servowritten individually in Kuroba '990 is because each group of discs is biased at a different angular reference axis associated with the contact position during servowriting. Accordingly, Kuroba '990 cannot sustain the Section 102 rejection because it does not identically disclose *prewritten discs, each characterized by servo tracks that are offset in relation to a common angular reference axis of each disc...*

disposing the angular reference axes symmetrically around the motor hub...and biasing each disc in a direction of the respective angular reference axis.

This dispute arises from the Examiner construing *common angular reference axis* to mean the direction of any external biasing or balancing force acting on the prewritten disc. Thus, in the Examiner's view, the disc can have more than one *common angular reference axis*. (Office Action of 8/21/2006, ppg. 3 and 6; Office Action of 3/1/2006, pg. 4)

Appellant has pointed out in the record, without rebuttal by the Examiner, that the Examiner's claim construction is reversible error because claim 1 plainly recites that the servo tracks are *offset in relation to a common angular reference axis of each disc*. The only factor that influences the *offset* of the tracks in relation to the disc is the direction of biasing the disc in the STW during servowriting. Again, once the servo tracks are written, the *offset* of the servo tracks in relation to the disc is fixed. Biasing the prewritten disc in different angular directions, as the Examiner suggests, changes an offset of the servo tracks in relation to the disc drive hub axis of rotation, but not in relation to the disc as claimed.

Appellant has also pointed out in the record, without rebuttal by the Examiner, that the Examiner's claim construction is reversible error because the present embodiments, as claimed, requires that there be only one angular reference axis per disc and not many as the Examiner suggests. As explained above, once the servo tracks are written, the offset of the servo tracks in relation to the angular reference axis of the disc is fixed.

Appellant has also pointed out in the record, without rebuttal by the Examiner, that the Examiner's claim construction is reversible error because he has not substantiated any evidence in the record as to why a skilled artisan would reasonably view differently directed angular reference axes to be a *common angular reference axis*. That is, there is absolutely

nothing "common" about differently directed angular reference axes.

Accordingly, the Examiner has not made out the requisite *prima facie* case of anticipation by failing to substantiate evidence in the record that Kuroba '990 identically discloses *prewritten discs, each characterized by servo tracks that are offset in relation to a common angular reference axis of each disc... disposing the angular reference axes symmetrically around the motor hub...and biasing each disc in a direction of the respective angular reference axis* as claimed. Appellant is entitled to an evidentiary showing as to how the cited reference anticipates each recited claim element within a construction that is reasonably broad and consistent with term usage in the specification.

Accordingly, the examination resulting in this rejection is incomplete with regard to the Examiner's obligation to consider the patentability of the invention as claimed. 37 CFR 1.104(a)(1). Because the final rejection is lacking the requisite *prima facie* basis, it also does not provide a reason for the rejection that is useful in aiding Appellant to judge the propriety of continuing the prosecution. 37 CFR 1.104(a)(2).

Claims 6 and 8 also stand rejected as being unpatentable over Kuroba '990 individually and in view of JP '422, respectively. However, these claims are allowable because JP '422 does not cure the deficiencies of Kuroba '990, and because these claims ultimately depend from independent claim 1, which is allowable for reasons stated above, and recite additional limitations thereto.

Appellant's position is that the rejection of claim 1 and the claims depending therefrom is inappropriate in the law and should be reversed.

Conclusion

In conclusion, Appellant respectfully requests that the rejection of all pending claims be reversed.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

1. (Previously presented) A method comprising:
placing prewritten discs, each characterized by servo tracks that are offset in relation to a common angular reference axis of each disc, around a motor hub, the prewritten discs placed with respect to each other disposing the angular reference axes symmetrically around the motor hub; and
biasing each disc in a direction of the respective angular reference axis to concentrically align the servo tracks of a first disc of the prewritten discs with the servo tracks of a second disc of the prewritten discs.
3. (Previously presented) The method of claim 1 wherein the biasing each disc step comprises pressingly engaging against an edge of each disc.
5. (Previously presented) The method of claim 1 wherein the placing step comprises disposing the angular reference axes in different nonopposite directions.
6. (Previously presented) The method of claim 1 wherein the placing step comprises disposing the angular reference axes in substantially opposite directions.
7. (Previously presented) The method of claim 1 wherein the placing step comprises placing prewritten discs with each comprising an indicia associated with the angular reference axis.

8. (Previously presented) The method of claim 7 wherein the placing step is characterized by an indicia comprising a laser index mark.

9. (Previously presented) The method of claim 7 wherein the placing step comprises placing prewritten discs with each comprising a first indicia on one side of the prewritten disc associated with the angular reference axis and a second indicia associated with the angular reference axis and different than the first indicia on the other side of the prewritten disc.

21. (Previously presented) The method of claim 9 wherein the placing step is characterized by first and second indicia with each comprising a first line that is coextensive with the angular reference axis and a second line angularly disposed from the first line.

IX. EVIDENCE APPENDIX

No additional evidence is included.

X. RELATED PROCEEDINGS APPENDIX

There exist no relevant related proceedings concerning this Appeal before the Board.